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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BISSETT, MELANIE D

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 10/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/790,502

Applicant(s)

SHAH ET AL.

Examiner

Melanie D. Bissett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

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1. The prior art rejections have been maintained or altered to reflect the amended claims.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 25-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The term "generally ambient temperature" has been recited in the claims to somehow limit the temperature of the process. Although the specification supports "ambient temperature," it does not appear to support any temperatures outside the range of ambient temperature.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 25-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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6. The independent claims recite "generally ambient temperatures" as a process step in the process and product claims. However, the word "generally" renders the claims indefinite because it is unclear whether the applicant intends to limit the temperature range or whether the applicant intends to limit the "ambient temperature" limitation to be optional. Since "generally" is generally used to mean "usually" or "commonly," it is unclear how this word is meant to describe the temperature.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 29-31 and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pellegrini et al. in view of Siebert.

9. From a prior Office action:

Pellegrini teaches an improved bipolar separator for electrochemical cells, where the cells may be used in fuel cells (abstract; col. 1 lines 7-11). The separators are substantially impermeable to diffusion of hydrogen, are rigid and are protected from discharge of anionic species (col. 2 lines 33-38). The separator plates are made by molding carbon, graphite, or metallic powder into a thermosetting resin (col. 2 lines 60-68). Insulating coatings for the separators include polyester, phenolic, furanic, and epoxide resins (col. 4 lines 44-53). The example shows a separator coated with a resin coating to a thickness of 200 μm , where the coating is cured with heat. Pellegrini fails to teach a coating layer of less than about 150 μm thick. However, because of the insulative properties of the coating, it is the examiner's position that it would have been prima facie obvious to apply the coating at any thickness to balance cost and insulation properties of the cell structure.

Pellegrini applies as above, failing to mention the use of infrared-curable sealant materials comprising epoxy resin and acrylonitrile butadiene copolymer. Siebert teaches the use of compositions comprising epoxy resin, polybutadiene-acrylonitrile rubber, and an amine crosslinking agent (example 1), where the mixture is cast onto a substrate and thermally cured (col. 7 lines 33-50). The compositions can be used as castable gaskets, seals, and o-rings (col. 7 lines 51-57). It

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is the examiner's position that it would have been prima facie obvious to use the epoxy coatings of Siebert's invention as gaskets in Pellegri's invention, since the epoxy compositions of Siebert's invention are castable and hence more easily applied. Regarding the limitations to "polymerized or cross-linked in response to infrared radiation," it is the examiner's position that the cured coatings of the reference would be indistinguishable from those cured by infrared radiation. It is the examiner's position that the claimed cure process in this case would not provide a patentably distinct product.

10. Regarding the limitation of polymerization at "generally ambient temperatures," it is the examiner's position that the cure temperature would not provide a patentably distinct and structurally different product.

11. Claims 25, 27-28, 32, and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pellegri et al. in view of Siebert as applied above, and further in view of *Kirk-Othmer Encyclopedia of Chemical Technology*.

12. The Pellegri and Siebert references apply as above, teaching thermal crosslinking methods but failing to teach the use of infrared radiation to cure the coatings. The *Kirk-Othmer Encyclopedia of Chemical Technology* teaches that thermally cured polymer systems, including epoxy/polyfunctional amine systems, form thermal energy and cure by infrared radiation with improved efficiency and focus (p. 846; p. 854). Thus, it would have been prima facie obvious to use infrared radiation to thermally cure the coatings of the Pellegri and Siebert inventions to improve efficiency and focus of the cure process.

13. Claims 26 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pellegrini et al. in view of Siebert and *Kirk-Othmer Encyclopedia of Chemical Technology* as applied above, and further in view of Canfield.

14. The references apply as above for the process of sealing a fuel cell plate, failing to mention the application of the coating by screen printing. However, Canfield shows the conventionality of screen printing a gasket onto a fuel cell plate (Figure 6, col. 4 lines 40-51). It is the examiner's position that it would have been prima facie obvious to use a screen printing technique to apply the gasket layer to provide a patterned discontinuous gasket layer having equally improved insulative properties.

Response to Arguments

15. In response to applicant's argument that Siebert is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both references are concerned with epoxy resin compositions having amine hardeners.

16. Regarding the temperature limitations, it is noted that the product claims are written in product-by-process format. Since the same materials are crosslinked, it is the examiner's position that the article would have no structural differences than those made by the applicant's process. Regarding the process claims, the *Kirk-Othmer*

Encyclopedia of Chemical Technology has been provided to teach the conventionality of using infrared radiation to cure thermally curable systems without conventional heating.

17. In response to the applicant's arguments that the examiner has not shown that the coatings of the reference would be indistinguishable from those cured by infrared radiation, it is noted that the crosslinking materials used in the reference to form the coatings are the same as those used by the applicant (see specification, [0012]). Also, the applicants note the use of both infrared and thermal cure processes as suitable processes for forming the inventive fuel cell plates [0020]. Regardless of cure process, the resulting product would be the same. The applicant has not shown that the cure process provides a different product. Although the applicants point to the specification to show that substrates warp with heat, it is noted that no evidence has been shown to support such an allegation. Also, the specification only notes that warpage problems **may** occur in **graphite** plates when heated to **certain temperatures**.

18. In response to the applicant's arguments that one would not look to include the acrylonitrile rubber of the Siebert invention in the Pellegrini invention because it would require heating, the Pellegrini reference teaches that heating the fuel cell plates would form a suitable article (examples). One considering both references would assume the heat required for polymerization to be acceptable.

19. Regarding the applicant's arguments that the references require amine hardeners and so would form a different product than the claimed product, it is noted that the claims do not exclude amine hardeners. Although the new claims recite "consisting essentially of" language, there is no evidence from the specification that

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amine compounds or other additives would materially affect the basic and novel characteristics of the invention. In fact, the specification suggests the use of amine crosslinkers and various other reactive or non-reactive additives [0059; 0061].

20. Regarding the applicant's arguments that the motivation to combine Pellegri and Siebert comes from a statement by the examiner and not from the references, it is noted that the Siebert reference teaches the coatings as castable materials. Thus, one skilled in the art would be guided to use the coatings for their castable nature. Regarding the applicant's arguments that the claimed invention teaches away from casting coatings, this is irrelevant to the combination of the two cited references. If one skilled in the art would be motivated to combine the references for any reason taught by the references, a prima facie case of obviousness may be shown.

21. In response to applicant's argument that the references teach different motivations for the claimed process steps or product limitations, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie D. Bissett whose telephone number is (571) 272-1068. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Melanie D. Bissett
Patent Examiner
Art Unit 1711

mdb